

Work Order ID 56494

February 25, 2013 10:47:02 AM



Page 1

Item ID: D3391-021

Accept



Setup Start



Revision ID:

Stop



Item Name: Fwd Tube Assembly

Start Date: 2/25/10 Start Qty: 1.00



Cust Item ID:

Required Date: 3/05/10 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals:

Process Plan:

Handwritten initials

Date: 10-2-25

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|---|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr | Revision Nbr | | | | | | | | |
| D3391 | Rev H | | | | | | | | |
| 100 | | 0.00 | | | | | | | |
| | Skidtubes | | | | | | | | |
| Skidtubes | Memo | 0.00 | | | | | | | |
| Skidtubes | Cut extrusion to 46.52 +0.010 -0.020 | | | | | | | | |
| 110 | | 0.00 | | | | | | | |
| | BENDING MACHINE - SKIDTUBES | | | | | | | | |
| CNC Bend 1 | Memo | 0.00 | | | | | | | |
| CNC Delta 100 Bender | Bend as per Dwg D3391 Using Bend Prog 3391021 | | | | | | | | |
| 120 | | 0.00 | | | | | | | |
| | QC5- Inspect part completeness to step on W/O | | | | | | | | |
| QC | Memo | 0.00 | | | | | | | |
| Quality Control | | | | | | | | | |

Handwritten circled A

Handwritten BE 10/02/25

Handwritten DP

Handwritten 10/2/25

Handwritten circled K

Handwritten S

Handwritten 10/2/26

Handwritten h = 6.75"

Handwritten L = 12.9"

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

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Start Date: 2/25/10 Start Qty: 1.00



Cust Item ID:

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--|--|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
| 130 HAAS 1 HAAS CNC vertical machine #1 | HAAS CNC VERTICAL MACHINING #1 Memo 1-Machine as per Folio FA590 Rev. AA & Dwg D3391 Rev. H Identify as D3391-1 2-Deburr | 0.00 0.00 | | | | 1 | 0 | | |
| 140 QC Quality Control | QC2- Inspect parts off machine FAI/FAIB Memo | 0.00 0.00 | | | | 1 | 0 | | |
| 150 Mill Conv Conventional Milling Machine | CONVENTIONAL MILLING MACHINE Memo Drill X1 Aft cap as per Dwg D3391 .1875" dia | 0.00 0.00 | | | | 1 | 0 | | |

| W/O: | | WORK ORDER CHANGES | | | | | |
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Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

ml 10/02/28

1 0

Quality Control

170

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

L.S. 10/03/02

Quality Control

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180



Skidtubes

Skidtubes

Skidtubes

Memo

0.00

0.00

1-Drill float bag holes as per Dwg D3391 using DT8798(Do not open tow cap holes to finish size)
(ONLY DRILL HOLES MARKED "A")

2-Drill Remaining two holes for tow cap using DT 8819 Locating off of .1875" holes drilled in previous step

3-Open tow cap holes to .208" as per Dwg D3391

4-Open Tow Ring hole to .640" as per Dwg D3391

5- open float bag holes 0.328" and counter sink as per dwg D3391

6-Deburr & Scribe Batch number Inside aft end.

7-Transfer drill D3391-021 with D3391-023

M12/313

190



QC
Quality Control

QC5- Inspect part completeness to step on W/O

Memo

0.00

0.00

8/10/03/04

70

| W/O: | | WORK ORDER CHANGES | | | | | |
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|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|

200

Chemical Conversion Coat per QSI005 4.1

0.00



HandFinish

Memo

0.00

Hand Finishing

1

M 10/3/14

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control



10-3-4

220

Skidtubes

0.00



Skidtubes

Memo

0.00

Skidtubes

1-instal spacers as per dwg D3391

A/R Magnabond 6398 batch: M112417

exp. date: 11/1/30

cure time 12hrs. as per QSI015

2- grind crossbolt flush

3-back drill crossbolt if necessary

M 10/3/14

| W/O: | | WORK ORDER CHANGES | | | | | |
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Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

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|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|

230

QC5- Inspect part completeness to step on W/O

0.00

Sides 60



QC

Memo

0.00

Quality Control

④

PTO =>

240

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

M114841



Powdercoat

Memo

0.00

Powder Coating

START TIME: 8:00
OVEN TEMPERATURE: 320°
FINISH TIME: 8:30

①. PR 08-8-31

250

QC3- Inspect Part Finish

0.00

=> 10/08/31



QC

Memo

0.00

Quality Control

1 9

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|----------|-------|--|----|----------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| 10/08/30 | 230.1 | Recalibrated Pressure was n As per PAR-043 | JL | 10/08/30 | 1 | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Customer:




Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--|---|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
| 255  Skidtubes | Skidtubes | 0.00 | | | | | | | |
| | Memo | 0.00 | | | | | | | |
| | **** install D3591-1 spacer as per DSI9364 and wearplate and gasket as per DWG **** | | | | | | | | |
| 257  QC | QC5- Inspect part completeness to step on W/O | 0.00 | | | | | | | |
| | Memo | 0.00 | | | | | | | |
| | Quality Control | | | | | | | | |
| 260  Packaging | Identify as per dwg & Stock Location: <u>Up 61475</u> | 0.00 | | | | | | | |
| | Memo | 0.00 | | | | | | | |
| | Packaging | | | | | | | | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/09/01 *[Signature]*
MF
10-9-1

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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NOTE: Date & initial all entries

Picklist Print

February 25, 2010 10:47:07 AM

Page 1

Work Order ID: 56494

Parent Item: D3391-021

Parent Item Name: Fwd Tube Assembly

Start Date: 2/25/10

Required Date: 3/05/10

Comments: IPP A 05.09.13 New issue KJ/JLM
IPP B 06.02.10 Dwg rev.D ecn 773 EC
IPP C 06.05.02 Added inspections EC
IPP D 07.03.13 rev F dwg EC

Start Qty: 1.00

Required Qty: 1.00

D6013-047 Manufactured No 100 Each 51.0000 1.0000
Skidtube Material

Warehouse Loc Qty Loc Code

Location

Main Warehouse

LG 51

23935 3

26547 48

D3670-4-200 Manufactured No 255 Each 83.0000 4.0000
SPACER

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST 83

48198 4

48269 79

D3401-041 Manufactured No 255 Each 25.0000 1.0000
Tow Cap Assembly

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST 25

36216 1

41931 1

46029 13

50316 10

BE 10/02/25

4 11/01/14

11 10/08/21

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Parent Item: D3391-021



Parent Item Name: Fwd Tube Assembly

Start Date: 2/25/10

Required Date: 3/05/10

Comments: IPP A 05.09.13 New issue
IPP B 06.02.10 Dwg rev.D ecn 773
IPP C 06.05.02 Added inspections
IPP D 07.03.13 rev F dwg

KJ/JLM
EC
EC
EC

Start Qty: 1.00

Required Qty: 1.00

D3564-13 Manufactured No

255

Each

19.0000

1.0000



Wearshoe

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP17

7

51611

7

Main Warehouse

ST

12

45409

2

46495

10

1359660

X1 4/10/08/31

D3566-13 Manufactured No

255

Each

79.0000

1.0000



Gasket

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

FP

77

53461

77

Main Warehouse

ST

2

45717

1

50265

1

1359661

X1 4/10/08/31

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|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Comments: IPP A 05.09.13 New issue
IPP B 06.02.10 Dwg rev.D ecn 773
IPP C 06.05.02 Added inspections
IPP D 07.03.13 rev F dwg

KJ/JLM

EC

EC

EC

Start Qty: 1.00

Required Qty: 1.00

AN960C10L

Purchased

No

255

Each

388.0000

10.0000



washer * NAS 11490332 R

Warehouse

Loc Qty

Loc Code

Location

OFFSHORE

FG

100

103585

100

Main Warehouse

ST

288

112116

128

112612

160

NA115000

x10 M 10/08/31

AN3C4A

Purchased

No

255

Each

1,033.000

10.0000



BOLT

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

1033

112314

13

112720

12

112724

3

112829

1

112991

2

113121

64

113226

344

113644

394

113749

200

M114941

x10 M 10/08/31

Dart Aerospace Ltd

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Start Date: 2/25/10

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 IPP B ☐ 06.02.10 ☐ Dwg rev.D ecn 773 ☐ EC ☐
 IPP C ☐ 06.05.02 ☐ Added inspections ☐ EC ☐
 IPP D 07.03.13 rev F dwg EC

Start Qty: 1.00

Required Qty: 1.00

D3672-1 Manufactured No 255 Each 1,682.000 4.0000



Phenolic Washer

Warehouse Loc Qty Loc Code

Location

Main Warehouse

| | |
|-------|------|
| ST | 1182 |
| 39275 | 19 |
| 42329 | 5 |
| 47628 | 158 |
| 2505 | 1000 |

Main Warehouse

| | |
|-------|-----|
| ST117 | 500 |
| 51674 | 500 |

AEELS-1032-130 Purchased / No 255 Each 0.0000 2.0000



INSERT

AEELS-1032-225 Purchased No 255 Each 0.0000 10.0000



INSERT

x4 10/08/31

x2 10/08/31

x10 10/08/31

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

SHOP COPY

RETURN TO

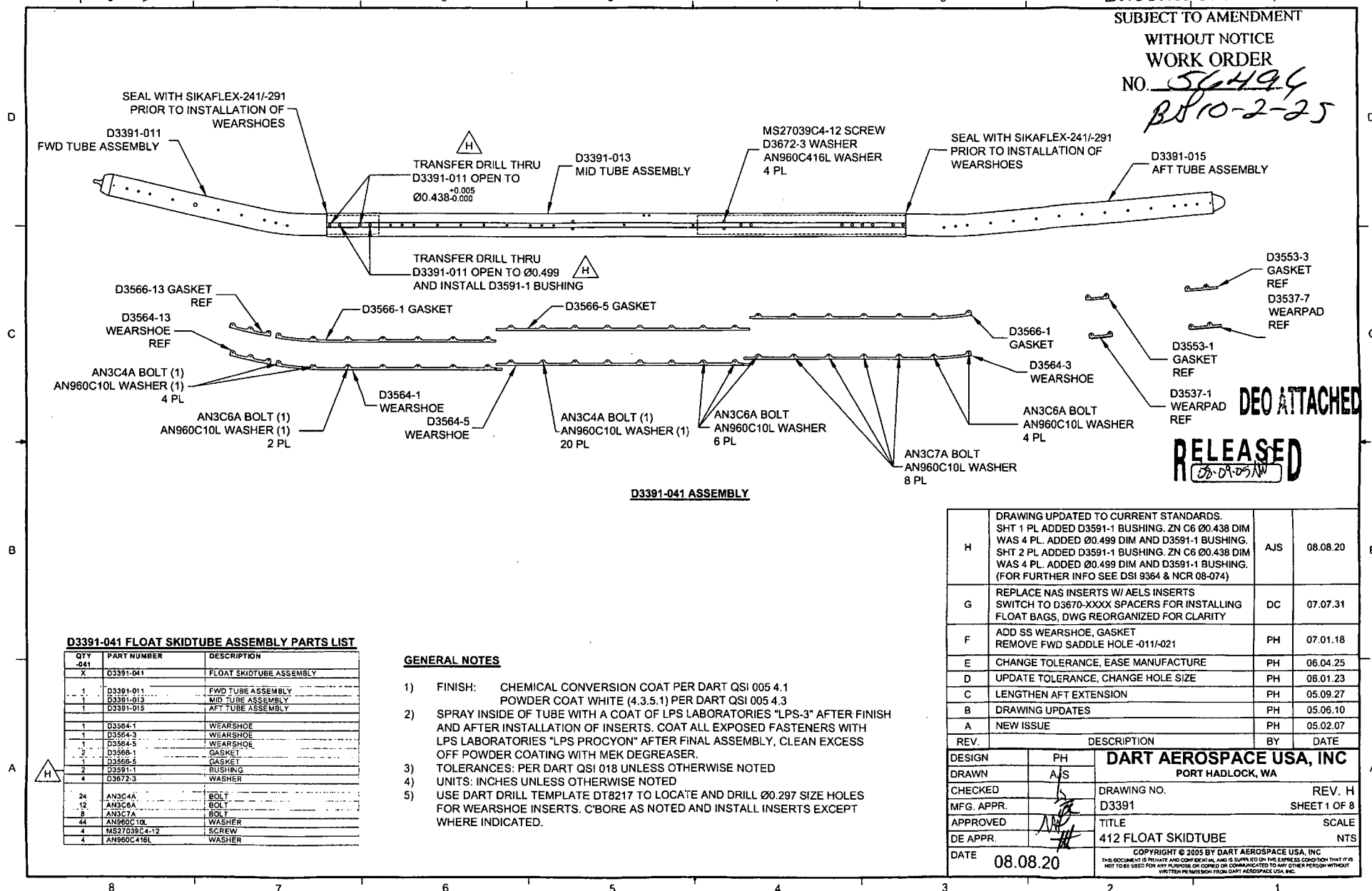
ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

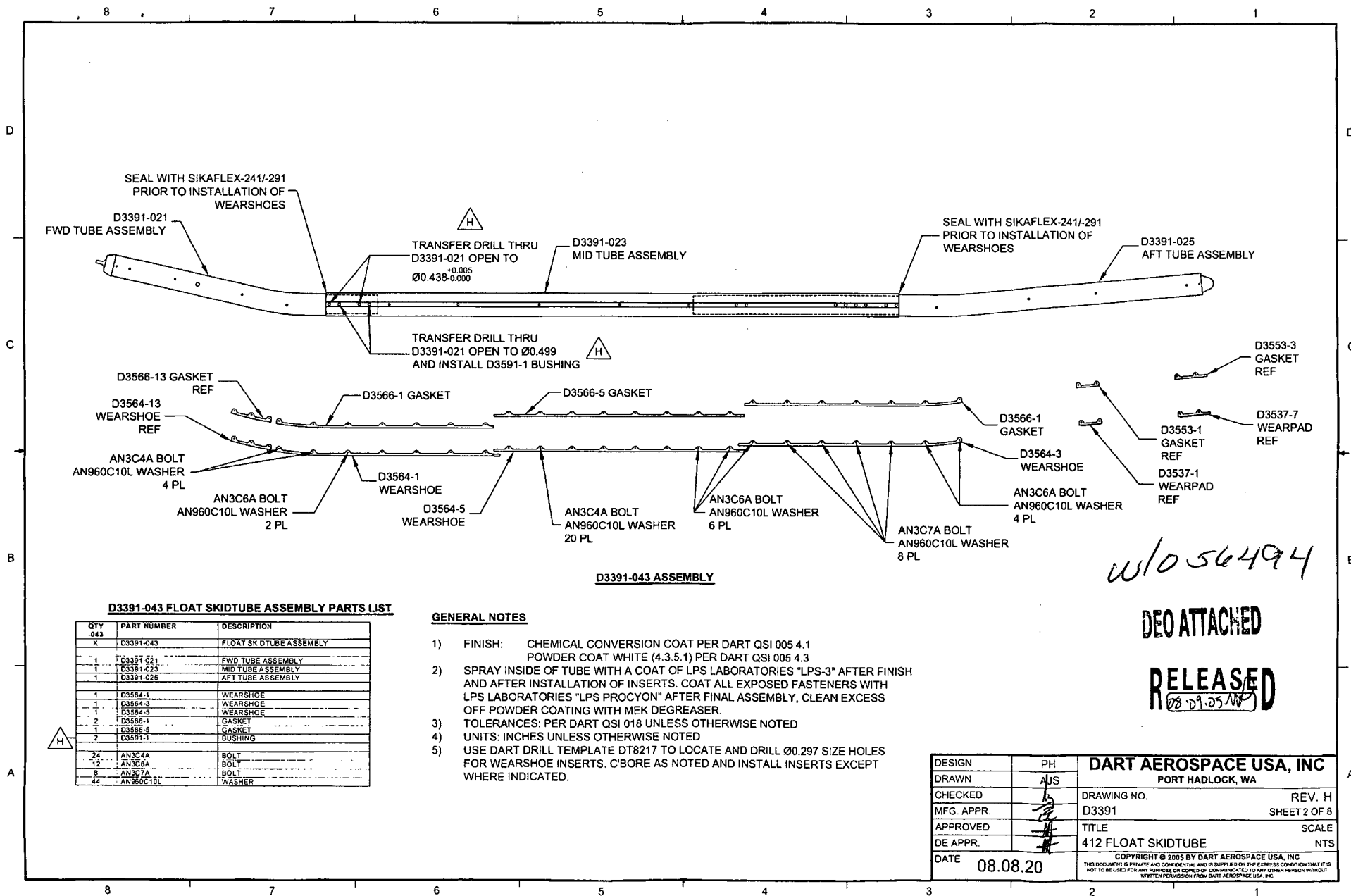
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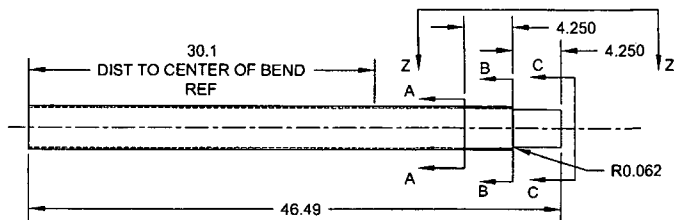
WORK ORDER

NO. 56494
B810-2-25

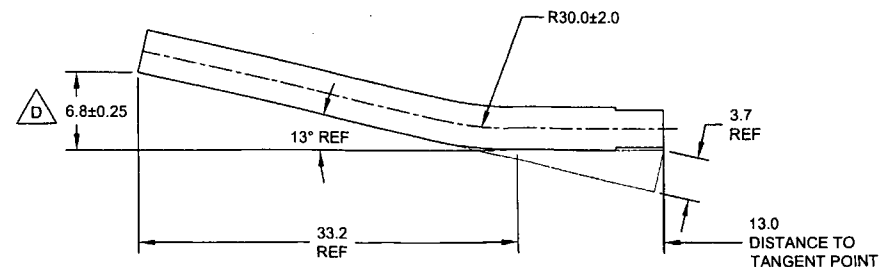
DEO ATTACHED

RELEASED
08-09-20

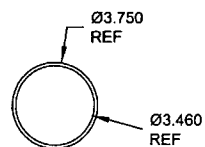




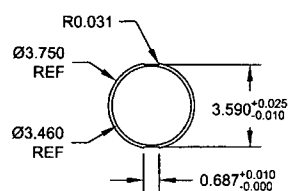
D3391-1 CUTTING DETAIL
(MAKE FROM D6013-047 SKIDTUBE MATERIAL)



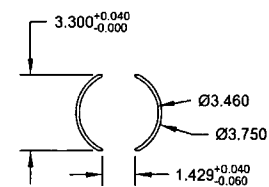
D3391-011/-021 BENDING DETAIL
(MAKE FROM D3391-1)



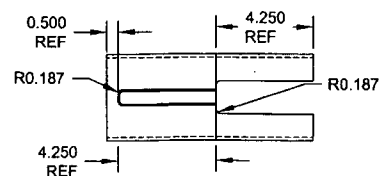
SECTION A-A
SCALE 2X



SECTION B-B
SCALE 2X



SECTION C-C
SCALE 2X

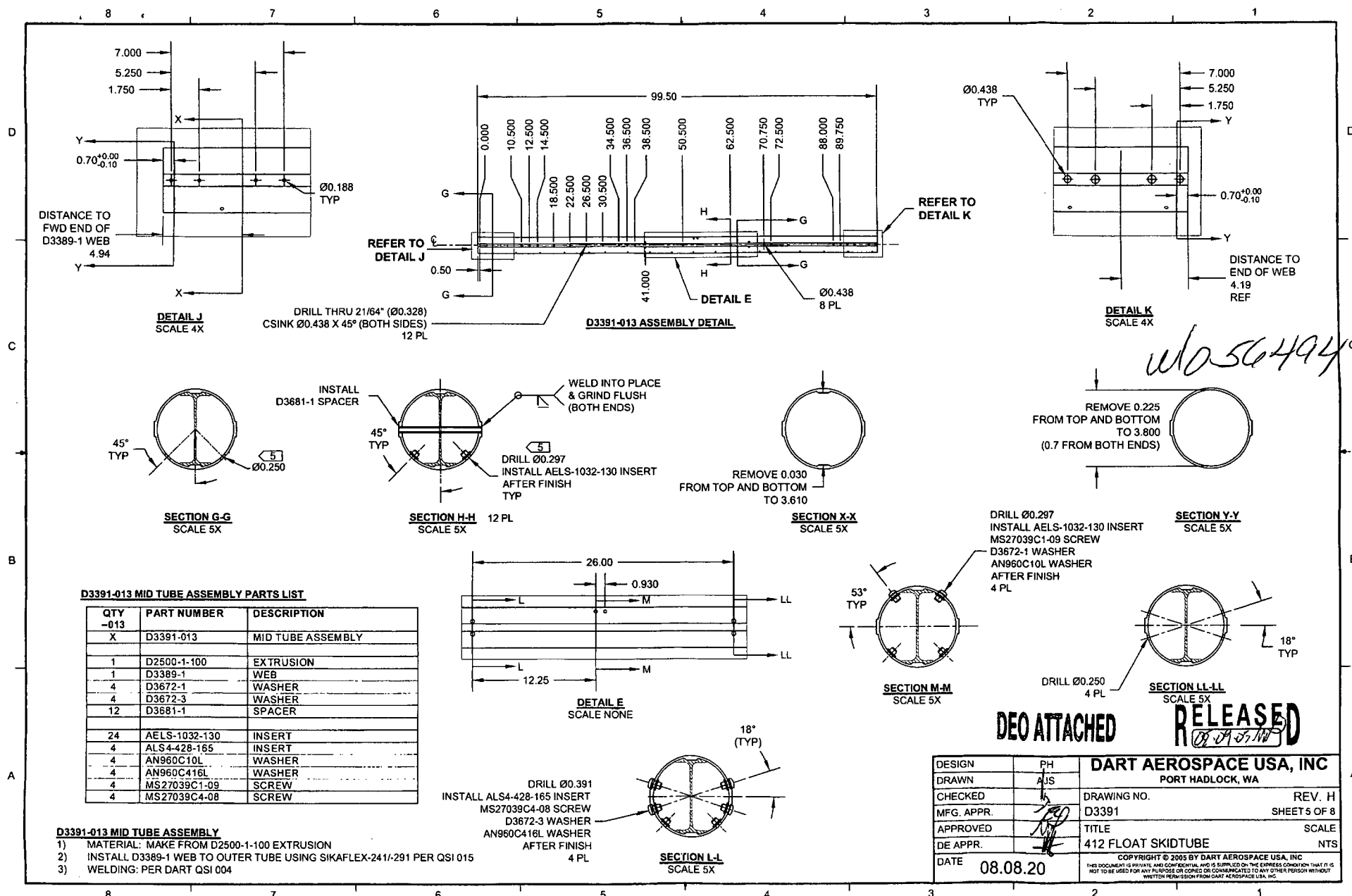


VIEW Z-Z
SCALE 2X

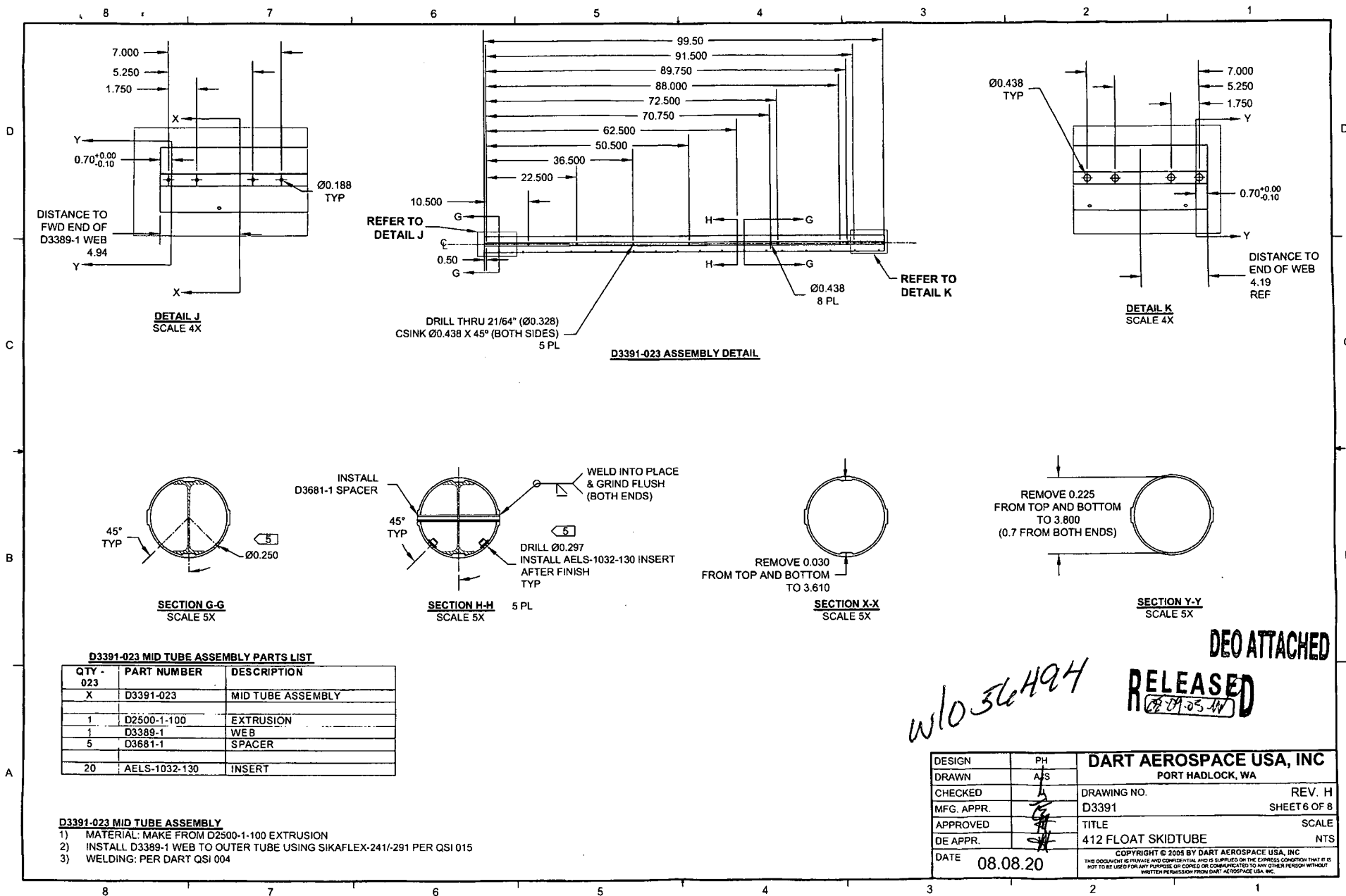
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RELEASED
21-05-11

W/O 56494

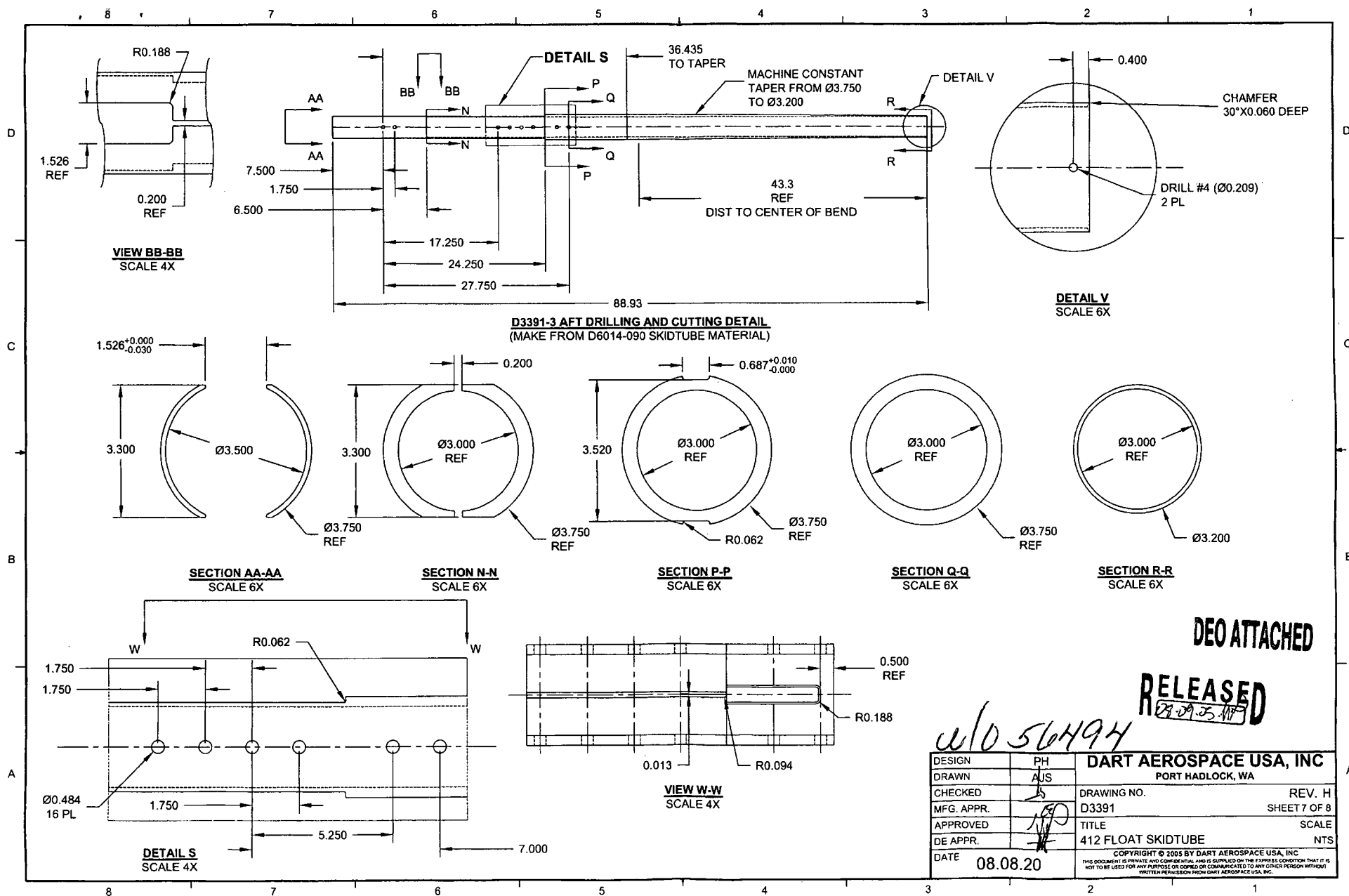
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|------------|----------|---|---------------------|
| DESIGN | PH | DART AEROSPACE USA, INC | |
| DRAWN | AJS | PORT HADLOCK, WA | |
| CHECKED | | DRAWING NO. D3391 | REV. H SHEET 3 OF 8 |
| MFG. APPR. | | TITLE | SCALE |
| APPROVED | | 412 FLOAT SKIDTUBE | NTS |
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W056494^c



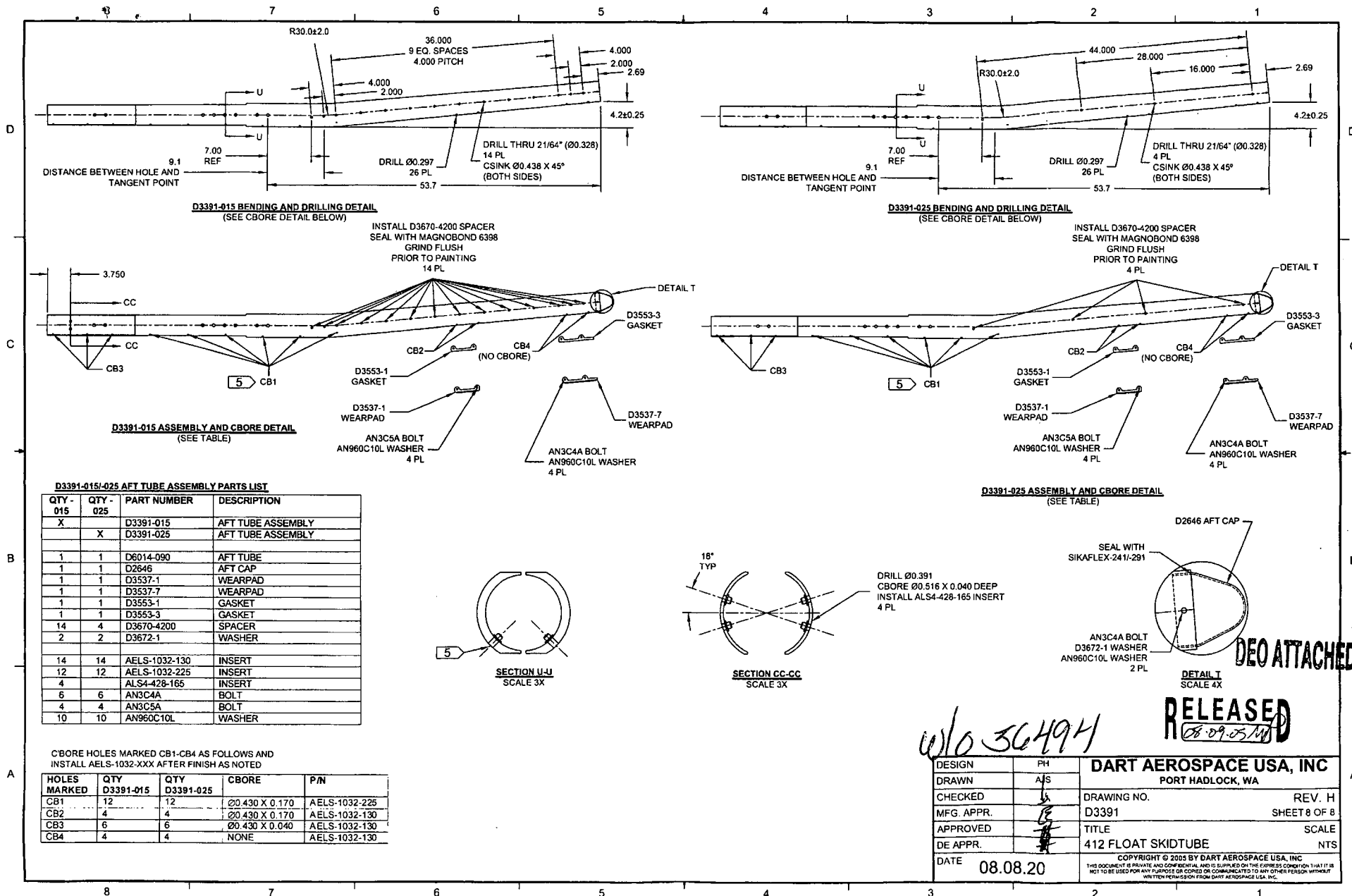
DEO ATTACHED
RELEASED
w/1036494



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29-09-25-117

| | | | |
|------------|----------|--|--------------|
| DESIGN | PH | DART AEROSPACE USA, INC | |
| DRAWN | AJS | PORT HADLOCK, WA | |
| CHECKED | | DRAWING NO. | REV. H |
| MFG. APPR. | | D3391 | SHEET 7 OF 8 |
| APPROVED | | TITLE | SCALE |
| DE APPR. | | 412 FLOAT SKIDTUBE | NTS |
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| | | | | | | | |
|----------------------|-----------------------------|----------------------|--|--|-------------------------|---------------------------|--------------|
| DRAWING NO. D3391 | TITLE 412 FLOAT SKIDTUBE | REV. H | DART AEROSPACE USA, INC ENGINEERING ORDER | | D.E.O. NO. D3391-H-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN* <i>MP</i> | CHECKED <i>h</i> | MFG. APPR. <i>MA</i> | APPROVED <i>MP</i> | | DE APPR. <i>h</i> | | |
| DATE 09.09.23 | DATE 09.09.24 | DATE 09/09/25 | DATE 09/09/30 | | DATE 09/09/30 | | |

PURPOSE:

LPS-3 IS NO LONGER USED DURING ASSEMBLY OF D3391-041/-043 SKIDTUBES.

CHANGE:

AMEND NOTE 2 OF D3391-041/-043 SKIDTUBE ASSEMBLIES (ZN A6-1, A6-2) AS FOLLOWS:

- 2) ~~SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH~~
~~AND AFTER INSTALLATION OF INSERTS. COAT ALL EXPOSED FASTENERS WITH~~
 LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS
 OFF POWDER COATING WITH MEK DEGREASER.

RELEASED
 2010-02-02

MP

w/d 56494

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